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UNITED STATES PATENT AND TRADEMARK OFFICE

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BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES

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*Ex parte* DIETER GROEZINGER

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Appeal 2010-005503  
Application 10/591,198  
Technology Center 1700

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Before CHUNG K. PAK, CHARLES F. WARREN, and  
CATHERINE Q. TIMM, *Administrative Patent Judges*.

PAK, *Administrative Patent Judge*.

DECISION ON APPEAL

Appellant appeals under 35 U.S.C. § 134(a) from the Examiner's refusal to allow claims 1, 2, and 4 through 7.<sup>1</sup> Claim 8, the other claim pending in the above-identified application, stands withdrawn from consideration by the Examiner as being directed to a non-elected invention. We have jurisdiction under 35 U.S.C. § 6.

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<sup>1</sup> See Appeal Brief ("App. Br.") filed August 21, 2009, 2; and Examiner's Answer ("Ans.") filed October 9, 2009, 2.

## STATEMENT OF THE CASE

The subject matter on appeal is directed to water soluble salt cores that are manufactured by compacting a mixture of water soluble salts and an inorganic phosphate binder or a mixture of inorganic phosphate binder under pressure and subsequently sintering or thermally treating the compacted mixture. (*See* original Spec. 2, ll. 5-10 and 3, l. 14.) The use of the inorganic phosphate binders in forming the water soluble cores is said to be advantageous in that they avoid the carbonization and outgassing problem associated with using synthetic resin binders (*See* original Spec. 1-2.) Such water soluble salt cores are said to be used for casting purposes and are said to contain “0 and 10 wt. % of a parting agent<sup>2</sup> such as graphite.” (*See* original Spec. 1, ll. 13-14 and 2, ll. 15-16.) Details of the appealed subject matter are recited in representative claim 1<sup>3</sup> reproduced from the Claims Appendix to the Appeal Brief as shown below:

1. Water soluble salt cores manufactured by compacting a mixture of water soluble salts and binder under pressure and by subsequently subjecting said compacted mixture to a thermal treatment,

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<sup>2</sup> According to pages 1 and 876 of Hawley’s Condensed Chemical Dictionary(11<sup>th</sup> Ed., Van Nostrand Reinhold, New York.1987), the term “parting agent” is defined as “[a]ny substance that prevents adhesion of a material to...another material.”

<sup>3</sup> Appellant has presented substantive arguments directed to claim 1 only. (*See* App. Br. 3-6 and Reply Br. 1-2). Therefore, for purposes of this appeal, we select claim 1 and decide the propriety of the Examiner’s § 103 rejections set forth in the Answer based on this claim alone in accordance with 37 C.F.R. § 41.37(c)(1)(vii) .

wherein the binder is an inorganic phosphate or a mixture of inorganic phosphates, the binder comprising between 0.5 and 10 by wt. % of said mixture of water soluble salts and the binder, the mixture of water-soluble salts and the binder further comprising between approximately 1 and 10% by weight of a parting agent comprising graphite,

wherein the mixture of the water soluble salts and the binder is compacted and subsequently sintered at approximately 200 degrees C, and

wherein the compacted and sintered mixture is not subjected to outgassing at a temperature below 700 degrees C during a heating process in the subsequent thermal treatment.

As evidence of unpatentability of the claimed subject matter, the Examiner relies on the following prior art references at pages 2 and 3 of the Answer:

Halpern	US 2,878,539	Mar. 24, 1959
Anderko	US 3,764,575	Oct. 9, 1973
Melling	US 5,573,055	Nov. 12, 1996
Belyakov	SU 1196096 A	Dec. 7, 1985 <sup>4</sup>

Appellant seeks review of the following grounds of rejection set forth in the Answer:

1. Claims 1, 2, and 4 through 7 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Anderko, Melling, and Halpern; and

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<sup>4</sup> Our reference to Belyakov is to the English translation of the Abstract of SU 1196096 A relied upon by the Examiner. (See the Final Office Action dated April 6, 2009, and Ans. 3).

2. Claims 1, 2, and 4 through 7 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Belyakov and Halpern. (See App. Br. 3.)

#### RELEVANT FACTUAL FINDINGS

Anderko discloses that sand cores were known to be used in foundries for casting purposes, but were replaced by “cores of water-soluble salts, such as sodium chloride or potassium chloride which was pressed and...sintered at temperatures between 500 and 750°C” (col. 1, ll. 5-36). Such high sintering temperatures, according to Anderko, were known to carbonize the synthetic resin binder employed in the water-soluble salt cores, thereby avoiding evolution of gases during their use in making castings (col. 2, ll. 15-27). Anderko discloses that it was known to include “up to 10 percent of borax [(i.e., borate)], magnesia, or talcum, individually or in admixture to the [water-soluble] salt in order to promote the sintering process so that the compressive and bending strengths are much improved” (col. 1, ll. 46-53).

Melling, like Anderko, discloses forming a water dispersible mold, in particular a core, for use in casting processes (col. 3, l. 6 to col. 4, l. 10). Melling also discloses the desirability of using a binder derived from at least one water-soluble phosphate and/or borate glass in forming the mold since such binder “avoids the use of any organic materials which would volatilise or burn out when the mould is heated at high temperature” (col. 4, ll. 4-7).

Belyakov discloses forming water-soluble salt cores for casting purposes via combining water-soluble phosphate containing substance, such as chromophosphate binder and/or sodium polyphosphate, and sodium

chloride (water-soluble salt) (p. 1). Belyakov also discloses that the use of such a mixture eliminates the need for firing the cores and reduces the thermal treatment temperature for the cores from 700°C (in a previous method) to 300°C (p. 2). There is no dispute that it was well known at the time of the invention to use a compact molding machine or a pressure blowing machine for pressuring the foundry mixture to form cores, such as the core taught by Belyakov. (*Compare* Ans. Ans. 3 with App. Br. ).

Halpern, like Anderko, Melling, and Belyakov, discloses forming a core for casting purposes (col. 1, ll. 15-17). Halpern discloses forming such core with a mixture of foundry sand and a resin binder in the presence of about 0.1 to 1.0 wt % of “lubricants that...are ...parting agents such as calcium or zinc stearate, talc, graphite...” (col. 1, ll. 18-20, col. 2, ll. 32-34, and 64-66, and col. 6, ll. 13-24). Halpern also teaches adding a lubricant or a parting agent to a core forming composition is useful in forming a product virtually dust-free (col. 3, ll. 25-54, Example 1).

#### PRINCIPLES OF LAW

As our Supreme Court stated in *KSR Int'l Co. v. Teleflex Inc.*, 550 U.S. 398, 417 (2007) (*quoting Sakraida v. Ag Pro, Inc.*, 425 U.S. 273, 282 (1976):

[W]hen a patent ‘simply arranges old elements with each performing the same function it had been known to perform’ and yields no more than one would expect from such an arrangement, the combination is obvious.

“[A] reasonable expectation of success, not absolute predictability” supports a conclusion of obviousness. *In re Longi*, 759 F.2d 887, 897 (Fed. Cir. 1985).

Discovery of a problem readily noticeable by one of ordinary skill in the art does not impart patentability. *In re Ludwig*, 353 F.2d 241, 244 (CCPA 1965).

### ISSUE, ANALYSIS, AND CONCLUSION

Appellant does not dispute the Examiner’s determination that the collective teachings of Anderko and Melling would have suggested compacting an inorganic phosphate binder and a water soluble salt under pressure to form a core and then thermally treating the core in the claimed manner. (*Compare* Ans. 4 with App. Br. 5-6 and Reply Br. 1-2.) Nor does Appellant dispute the Examiner’s determination that one of ordinary skill in the art would have been led to form Belyakov’s cores via compacting a mixture containing a water soluble salt and an inorganic phosphate binder under pressure with a compact molding machine or a pressure blowing machine and then thermally treating the resulting compacted mixture in the claimed manner. (*Compare* Ans. 3 with App. Br. 3-5 and Reply Br. 1-2.) Rather, Appellant contends that there is no reason or suggestion to include graphite in the core forming composition suggested by Anderko and Melling or Belyakov. (*See* App. Br. 3-6 and Reply Br. 1-2.)

Thus, the dispositive question is: Has the Examiner erred in determining that one of ordinary skill in the art would have been led to employ graphite in the core forming composition suggested by the combined disclosures of Anderko and Melling or the disclosure of Beyakov within the

meaning of 35 U.S.C. § 103 ? On this record, we answer this question in the negative.

As recognized by Appellant at page 4 of the Appeal Brief, Halpern discloses forming a core with a mixture of foundry sand and a resin binder in the presence of about 0.1 to 1.0 wt % of a parting agent (an adhesion preventing agent) such as calcium or zinc stearate, talc, or graphite. (*See also* Halpern, col. 1, ll. 18-20, col. 2, ll. 32-34, and 64-66, and col. 6, ll. 13-24). Although Halpern discloses using a parting agent in the context of a core formed of foundry sand and a resin binder, it, like Anderko, Melling, and Belyakov, discloses forming a core containing a binder (an adhesion promoting agent) for the casting purposes as indicated *supra*. Moreover, Halpern teaches that the addition of a parting agent to a core forming composition is useful for forming a product virtually dust-free as indicated above.

Given the above teachings, we concur with the Examiner that one of ordinary skill in the art would have been led to employ the claimed amount of a parting agent, such as graphite, in the core forming composition suggested by Anderko and Melling or Beyakov, with a reasonable expectation of successfully minimizing any adhesion during casting associated with the binder in the core forming composition and/or the formation of dust associated with using water soluble salt and binder particles. *KSR*, 550 U.S. at 417 (*quoting Sakraida v. Ag Pro, Inc.*, 425 U.S. at 282); *Longi*, 759 F.2d at 897. This is especially true in this case since any adhesion or dusting problem associated with using the water soluble salt and binder particles suggested by Anderko and Melling or Beyakov in

casting processes and/or core forming processes, which warrants the parting agent taught by Halpern, would have been readily noticeable by one of ordinary skill in the art via simple observation. *Ludwig*, 353 F.2d at 244.

Accordingly, we affirm the Examiner's decision rejecting claims 1, 2, and 4 through 7 under 35 U.S.C. § 103(a) as unpatentable over the combined disclosures of Anderko, Melling, and Halpern and as unpatentable over the combined disclosures of Belyakov and Halpern.

***ORDER***

In view of the foregoing, it is

ORDERED that the decision of the Examiner rejecting claims 1, 2, and 4 through 7 under 35 U.S.C. § 103 is AFFIRMED; and

FURTHER ORDERED that no time period for taking any subsequent action in connection with this appeal may be extended under 37 C.F.R. § 1.136(a)(1)(iv).

**AFFIRMED**

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